



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,396	06/27/2003	Stephen St. Germain	ONS00494	4802

7590 05/03/2005

James J. Stipanuk  
Semiconductor Components Industries, L.L.C.  
Patent Administration Dept - MD/A700  
P.O. Box 62890  
Phoenix, AZ 85082-2890

EXAMINER

TRAN, THIEN F

ART UNIT	PAPER NUMBER
----------	--------------

2811

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/606,396

Applicant(s)

GERMAIN ET AL.

Examiner

Thien F. Tran

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 7, 10, 12, 14-16, 19-32, 34 and 38-41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8, 9, 11, 13, 17, 18, 33, 35-37 and 42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/19/2005 has been entered.

### ***Election/Restrictions***

Claims 34 and 38-41 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 09/07/2004.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-5, 8, 11, 13, 17-18, 33, 35-36 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto et al. (USPN 6,624,511) in view of Hasebe et al. (USPN 6,713,849).

Art Unit: 2811

Sakamoto et al. discloses an electronic device package (Figure 8) comprising: a support substrate (conductive foil 60) as a leadframe including a bonding site 51B and a flag 51A, wherein the flag has bonding surface; a first electronic chip (first semiconductor device 52A) having a first peripheral edge, wherein the electronic chip is attached to a first portion of the bonding surface with a first die attach material (a first chip attach layer 55B, 55C), wherein the first semiconductor device 52A includes a bond pad; a first continuous trench (a first groove 61) formed in the flag in proximity to the first peripheral edge, wherein the first continuous trench includes a continuously rounded cross-sectional shape, a curved sidewall surface, and an inner edge adjacent to the first peripheral edge; and an encapsulant 50 covering the first electronic chip and at least a portion of the curved sidewall surface (the substantially continuously curved inner surface). Sakamoto et al. does not explicitly disclose the first continuous trench 61 surrounding the first electronic chip 52A. Hasebe et al. discloses an electronic device package (Figures 5, 9 and 17) comprising: a support substrate including a flag 4, wherein the flag has bonding surface; a first electronic chip 3 having a first peripheral edge, wherein the electronic chip is attached to a first portion of the bonding surface with a first die attach material 5; a first continuous trench 20 formed in the flag in proximity to the first peripheral edge, wherein the first continuous trench 20 surrounds the first electronic chip 3. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to form the first continuous trench 61 of Sakamoto et al. surrounding the first electronic chip 52A as taught by Hasebe et al. so that die attach material 55C can be stopped by the first continuous trench and is thereby

Art Unit: 2811

prevented from reaching the wire connection areas beyond the trench. Hence the connection reliability of the wires 55A is improved.

Regarding claim 4, the first continuous trench 61 has a cross-sectional shape comprising an inverse omega shape.

Regarding claims 5 and 42, the first continuous trench 61 has a rounded corner.

Regarding claim 8 and claim 36, the first peripheral edge is spaced a distance inside the inner edge of the first continuous trench 61.

Regarding claim 11, at least a portion of the first die attach material 55C extends to the inner edge of the first continuous trench, the first continuous trench 61 is substantially absent die attach material.

Regarding claims 13 and 35, the die attach material (55B, 55C) is selected from a group consisting of a eutectic solder, a solder paste, a conductive epoxy, a polyimide film, a metal filled glass, and a pre-form structure.

Regarding claims 17 and 33, the support substrate 60 further includes a bonding site 51B having a bonding surface, and a bonding device 55A coupling the bond pad of the first electronic chip 52A to the bonding site, and the encapsulant 50 covers exposed portions of the flag 51A, the bonding site 51B, and the bonding device 55A, the first semiconductor device 52A, the bonding surface of the bonding site 51B.

Regarding claim 18, the first continuous trench 61 comprises an etched trench.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2811

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3, 6, 9 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto et al. (US 6,624,511) in view of Hasebe et al. (USPN 6,713,849).

Sakamoto et al. in view of Hasebe et al. does not disclose the first continuous trench 61 having a width in the claimed range. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the first continuous trench 61 having the width as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. In re Daily, 93 USPQ 47 (CCPA 1966), the court held that changes in size and shape of parts of an invention in the absence of an unexpected result involves routine skill in the art. Additionally, In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

Regarding claim 6, Sakamoto et al. discloses the first continuous trench having a depth of 50 microns but does not disclose the first continuous trench 61 having depth in range from about 100 microns to about 330 microns. It would have been obvious to one

Art Unit: 2811

having ordinary skill in the art at the time the invention was made to form the first continuous trench 61 having the depth as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. In re Daily, 93 USPQ 47 (CCPA 1966), the court held that changes in size and shape of parts of an invention in the absence of an unexpected result involves routine skill in the art. Additionally, In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

Regarding claims 9 and 37, Sakamoto et al. in view of Hasebe et al. does not disclose the distance being less than about 635 microns. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the distance being less than 635 microns, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. In re Daily, 93 USPQ 47 (CCPA 1966), the court held that changes in size and shape of parts of an invention in the absence of an unexpected result involves routine skill in the art. Additionally, In Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that

Art Unit: 2811

where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thien F. Tran whose telephone number is (571) 272-1665. The examiner can normally be reached on 8:30AM - 5:00PM Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tt  
May 1, 2005

  
**THIENTRAN**  
**PRIMARY EXAMINER**